

In the claims:

Claims 20 and 32 are cancelled. New claims 36-52 are added.

Added text is underlined, and deleted text is struck through or double-bracketed.

1. (Previously presented) A system including a plurality of stationary and/or portable electronic devices, comprising:

    a first Open Device with an inner structure and a first Personal Area Network interface;

    at least one Primitive Device arranged to communicate with and to act as a pure slave to other devices;

    at least one Closed Device with a closed inner structure and a second Personal Area Network interface;

    said first Open Device and said at least one Closed Device being connected in a Personal Area Network;

    said first Open Device being arranged to discover and register any of said other devices present in said Personal Area Network,

    a Personal Area Network middleware installed in said first Open Device, and arranged to act as a Personal Area Network controller

        to store and maintain a device profile including device information on at least identity, type, capabilities and services offered by any Open Devices, Closed Devices or Primitive Devices available to said Personal Area Network,

        to redirect an output stream from one device to an input port on another device,

        to redirect an application to a specific device present in said Personal Area Network,

        to store and maintain a user profile including user information on at least which Open Devices, Closed

Devices or Primitive Devices are members of said Personal Area Network, which Open Devices, Closed Devices or Primitive Devices are available for said Personal Area Network, redirection, which Open Devices, Closed Devices or Primitive Devices should be visible on an external network, distribution of services among Open Devices or Closed Devices present in said Personal Area Network, and distribution of resources among Open Devices or Closed Devices present in said Personal Area Network,

to include a user interface enabling a user to control said Personal Area Network middleware, and

to include an Application Programming Interface allowing applications access to capabilities and functions in said Personal Area Network middleware.

2. (Previously presented) The system as claimed in claim 1, further comprising a second Open Device connected to said Personal Area Network.

3. (Previously presented) A system including a plurality of stationary and/or portable electronic devices, comprising:

Open Devices each having an available inner structure and a first Personal Area Network interface;

at least one Primitive Device arranged to communicate with other devices and to act as a pure slave to said other devices;

at least one Closed Device with a closed inner structure and a second Personal Area Network interface;

said Open Devices and said at least one Closed Device being connected in a Personal Area Network,

said Open Devices each being arranged to act as a Personal Area Network controller, to discover and register any

devices present in said Personal Area Network, and to invoke services running on other Open Devices;

a Personal Area Network middleware installed on and distributed between said Open Devices, and arranged

to store and maintain a device profile including device information on at least identity, type, capabilities and services offered by any Open Devices, Closed Devices or Primitive Devices available for said Personal Area Network,

to redirect an output stream from one device to an input port on another device,

to redirect an application to a specific device present in said Personal Area Network,

to store and maintain a user profile including user information on at least which Open Devices, Closed Devices or Primitive Devices are members of said Personal Area Network, redirection, which Open Devices, Closed Devices or Primitive Devices should be visible on an external network, distribution of services among Open Devices or Closed Devices present in said Personal Area Network, and distribution of resources among Open Devices or Closed Devices present in said Personal Area Network,

to include a user interface enabling a user to control said Personal Area Network middleware, and

to include an Application Programming Interface allowing applications access to capabilities and functions in said Personal Area Network middleware.

4. (Previously presented) The system as claimed in claim 3, wherein at least one of said Open Devices or said Closed Devices is equipped with an external network interface connected to said external network.

5. (Previously presented) The system as claimed in claim 4, further comprising a Personal Area Network server residing on said external network, connected to said Personal Area Network, and arranged to store a backup copy of information stored in said Personal Area Network, and to synchronize said backup copy with said information.

6. (Previously presented) The system as claimed in claim 5, wherein each Open Device is arranged to periodically poll said Personal Area Network.

7. (Previously presented) The system as claimed in claim 3, further comprising a Web service platform installed on each Open Device for enabling said each Open Device to invoke Web services running on said other Open Devices.

8. (Previously presented) A system including a plurality of portable electronic devices, comprising:

- an Open Device with an available inner structure and a first Personal Area Network interface;

- at least one Primitive Device arranged to communicate with other devices and to act as a pure slave to said other devices;

- at least one Closed Device with a closed inner structure, a second Personal Area Network interface, and an external network interface;

- an external network to which said external network interface is connected;

- a Personal Area Network server residing on said external network,

said Open Device, said at least one Closed Device and said Personal Area Network server being connected in a Personal Area Network,

said Open Device being arranged to discover and register any of said other devices present in said Personal Area Network;

a Personal Area Network middleware, installed on said Personal Area Network server, operating said Personal Area Network and arranged

to store and maintain a device profile including device information on at least identity, type, capabilities and services offered by any Open Devices, Closed Devices or Primitive Devices available for said Personal Area Network,

to redirect an output stream from one device to an input port on another device,

to redirect an application to a specific device present in said Personal Area Network,

to store and maintain a user profile including user information on at least which Open Devices, Closed Devices or Primitive Devices are members of said Personal Area Network, which Open Devices, Closed Devices or Primitive Devices are available for said Personal Area Network, redirection, which Open Devices, Closed Devices or Primitive Devices should be visible on said external network, distribution of services among Open Devices or Closed Devices present in said Personal Area Network, and distribution of resources among Open Devices or Closed Devices present in said Personal Area Network,

to include a user interface enabling a user to control said Personal Area Network middleware, and

to include an Application Programming Interface allowing applications access to capabilities and functions in said Personal Area Network middleware.

9. (Previously presented) A system including a plurality of portable electronic devices, comprising:

- at least one Closed Device with a closed inner structure, a Personal Area Network interface, and an external network interface;

- at least one Primitive Device arranged to communicate with and to act as a pure slave to said at least one Closed Device;

- a server in said external network on which is installed a Personal Area Network middleware, said server being arranged to communicate with said at least one Closed Device in order to act as a Personal Area Network controller, wherein said Personal Area Network middleware is arranged

- to store and maintain a device profile including device information on at least identity, type, capabilities and services offered by any Closed Devices or Primitive Devices available for said Personal Area Network,

- to redirect an output stream from one device to an input port on another device,

- to redirect an application to a specific device present in said Personal Area Network,

- to store and maintain a user profile including user information on at least which Closed Devices or Primitive Devices are members of said Personal Area Network, which Closed Devices or Primitive Devices are available for said Personal Area Network, redirection, which Closed Devices or Primitive Devices should be visible on said external network, distribution of services among Closed Devices present in said Personal Area Network, and distribution of resources among Closed Devices present in said Personal Area Network,

- to include a user interface enabling the user to control said Personal Area Network middleware, and

to include an Application Programming Interface allowing applications access to capabilities and functions in said Personal Area Network middleware.

10. (Previously presented) The system as claimed in claim 9, wherein said Personal Area Network server is arranged to periodically poll devices connected to said Personal Area Network.

11. (Previously presented) The system as claimed in claim 1, characterized in that said Application Programming Interface is implemented as any of: Java, CORBA, or an XML Web service.

12. (Previously presented) The system as claimed in claim 1, wherein at least one of said Open Devices or said Closed Devices is equipped with an external network interface connected to said external network.

13. (Previously presented) The system as claimed in claim 12, further comprising a Personal Area Network server residing on said external network and arranged to store a backup copy of information stored in said Personal Area Network, and to synchronize said backup copy with said information.

14. (Previously presented) The system as claimed in claim 13, wherein said first Open Device is arranged to periodically poll said Personal Area Network.

15. (Previously presented) The system as claimed in claim 3, characterized in that said Application Programming Interface is implemented as any of: Java, CORBA, or an XML Web service.

16. (Previously presented) The system as claimed in claim 8, characterized in that said Application Programming Interface is implemented as any of: Java, CORBA, or an XML Web service.

17. (Previously presented) The system as claimed in claim 9, characterized in that said Application Programming Interface is implemented as any of: Java, CORBA, or an XML Web service.

18. (Currently amended) A system, comprising:

at least one first device capable of transmitting a first output stream via a first communication interface;

a second device comprising a second communication interface capable of receiving said first output stream, said second device and at least one third device forming a Personal Area Network;

a Personal Area Network middleware, executed by at least said second device, storing at least a user profile including redirection information for said at least one third device of the Personal Area Network, and arranged to intercept and redirect said first output stream to an input port of a third device based on said redirection information; and

a fourth device in communication with the second device wherein said second device is on a network external to said first and third devices, and wherein redirection of said first output is performed via the fourth device communicating with the second device over a network interface.



19. (Previously presented) The system as claimed in claim 18, further comprising a user interface application enabling a user to control said Personal Area Network middleware and manage said redirection information.

20. (Cancelled)

21. (Currently amended) The system as claimed in claim ~~20~~ 18, wherein said Personal Area Network middleware is distributed among and executed by both said second device and said fourth device.

22. (Previously presented) The system as claimed in claim 21, wherein user profile data and settings stored by said Personal Area Network middleware are synchronized between said second device and said fourth device.

23. (Previously presented) The system as claimed in claim 21, wherein said Personal Area Network middleware is distributed using XML Web services.

24. (Previously presented) The system as claimed in claim 18, further comprising at least one other second device, wherein said Personal Area Network middleware is distributed among said second devices.

25. (Previously presented) The system as claimed in claim 24, wherein said Personal Area Network middleware is distributed using XML Web services.

26. (Previously presented) The system as claimed in claim 18, wherein said first output stream is generated by a first application, said system further comprising a second application generating a second output stream, said second output stream being redirected by said Personal Area Network middleware to a third device other than that to which said first output stream is redirected.

27. (Previously presented) The system as claimed in claim 18, wherein said first device and said third device are selected from communication devices, computing devices, peripheral devices, electronic devices or electronic appliances.

28. (Previously presented) The system as claimed in claim 18, wherein at least one of said first devices and said third devices is arranged to communicate with and to act as a pure slave to other devices.

29. (Previously presented) The system as claimed in claim 18, wherein said Personal Area Network middleware is additionally arranged to discover and register any of said first, second, and third devices present in said Personal Area Network and to store their presence in a device profile including device information on at least identity, type, capabilities and services offered by any of said first, second, or third devices.

30. (Previously presented) The system as claimed in claim 18, wherein said user profile further comprises which of said first, second and third devices are members of said Personal Area Network.

31. (Previously presented) The system as claimed in claim 30, wherein said user profile further comprises which of said first, second and third devices are available for said Personal Area Network.

32. (Cancelled)

33. (Previously presented) The system as claimed in claim 18, wherein said user profile further comprises information regarding distribution of services and resources among said first, second and third devices present in said Personal Area Network.

34. (Previously presented) The system as claimed in claim 18, wherein said Personal Area Network middleware is arranged to include an Application Programming Interface enabling application access to capabilities and functions in said Personal Area Network middleware.

35. (Previously presented) The system as claimed in claim 34, wherein said Application Programming Interface is implemented as any of: Java, CORBA or an XML Web service.

36. (New) A system, comprising:

at least one first device capable of transmitting a first output stream via a first communication interface;

a second device comprising a second communication interface capable of receiving said first output stream, said second device and at least one third device forming a Personal Area Network;

a Personal Area Network middleware, executed by at least said second device, storing at least a user profile including redirection information for said at least one third device of the Personal Area Network, and arranged to intercept and redirect said first output stream to an input port of a third device based on said redirection information; and

wherein said user profile further comprises means for presenting which of said first, second and third devices are visible on an external network.

37. (New) The system as claimed in claim 36, further comprising a user interface application enabling a user to control said Personal Area Network middleware and manage said redirection information.

38. (New) The system as claimed in claim 36, wherein said second device is on a network external to said first and third devices, and wherein redirection of said first output is performed via a fourth device in communication with the second device over a network interface.

39. (New) The system as claimed in claim 38, wherein said Personal Area Network middleware is distributed among and executed by both said second device and said fourth device.

40. (New) The system as claimed in claim 38, wherein user profile data and settings stored by said Personal Area Network middleware are synchronized between said second device and said fourth device.

41. (New) The system as claimed in claim 38, wherein said Personal Area Network middleware is distributed using XML Web services.

42. (New) The system as claimed in claim 36, further comprising at least one other second device, wherein said Personal Area Network middleware is distributed among said second devices.

43. (New) The system as claimed in claim 42, wherein said Personal Area Network middleware is distributed using XML Web services.

44. (New) The system as claimed in claim 36, wherein said first output stream is generated by a first application, said system further comprising a second application generating a second output stream, said second output stream being redirected by said Personal Area Network middleware to a third device other than that to which said first output stream is redirected.

45. (New) The system as claimed in claim 36, wherein said first device and said third device are selected from communication devices, computing devices, peripheral devices, electronic devices or electronic appliances.

46. (New) The system as claimed in claim 36, wherein at least one of said first devices and said third devices is arranged to communicate with and to act as a pure slave to other devices.

47. (New) The system as claimed in claim 36, wherein said Personal Area Network middleware is additionally arranged to discover and register any of said first, second, and third devices present in said Personal Area Network and to store their presence in a device profile including device information on at least identity, type, capabilities and services offered by any of said first, second, or third devices.

48. (New) The system as claimed in claim 36, wherein said user profile further comprises which of said first, second and third devices are members of said Personal Area Network.

49. (New) The system as claimed in claim 47, wherein said user profile further comprises which of said first, second and third devices are available for said Personal Area Network.

50. (New) The system as claimed in claim 36, wherein said user profile further comprises information regarding distribution of services and resources among said first, second and third devices present in said Personal Area Network.

51. (New) The system as claimed in claim 36, wherein said Personal Area Network middleware is arranged to include an Application Programming Interface enabling application access to capabilities and functions in said Personal Area Network middleware.

52. (New) The system as claimed in claim 51, wherein said Application Programming Interface is implemented as any of: Java, CORBA or an XML Web service.